ABSTRACT OF THE DISCLOSURE

A nanocomposite made with an inorganic layered material and a star-shaped polystyrene that can be blended with normal linear polystyrene is disclosed. The inorganic layered material can have an exfoliated structure, substantially exfoliated, or intercalated structure. The exfoliated structure can result in significantly improved physical properties, even with only a very low content of clay. The invention is also directed to a process that can be used to make the compositions of the present invention. In one embodiment, a physical mixture of clay and star polymer is prepared and then the mixture is heated for several hours, preferably under high-shear mixing, to increase the rate of exfoliation, after which mostly inexpensive commodity linear polystyrene polymer completes the composition.